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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/765,349

01/27/2004

Erik C. Metz

D2724

1071

27774 7590 04/15/2009

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EXAMINER

CHIN, RICKY

ART UNIT

PAPER NUMBER

2423

MAIL DATE

DELIVERY MODE

04/15/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/765,349	<b>Applicant(s)</b> METZ ET AL.	
	<b>Examiner</b> RICKY CHIN	<b>Art Unit</b> 2423	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 January 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed January 5, 2009 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims (1-16) are rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al., US 6,449,071, in view of Sage, US 2003/0156602, and in further view of Leblanc et al., US 7,333,475.

Regarding claim 1, Farhan discloses a method for multi-port aggregation in a digital return path CATV system, the method comprising the steps of: digitizing each of a plurality of return path signals (See col. 2, lines 8-17, which discloses that reverse signals from many subscribers are summed and converted to digital format); splitting each of the plurality of the digitized return path signals into a respective plurality of low band signals and upper band signals(See col. 4. lines 37-57 which discloses a dividing the reverse spectrum possessing of low information content signals and high information content signals which are coded for example by a 4-bit data stream for low

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information and 6 or 8 bits for high data signals); downconverting each of the plurality of upper band signals from an original frequency range into a new downconverted frequency range (See col. 5 lines 11-20 and col. 6 lines 17-22 ,which discloses compressing the input data and performing complex-down conversion); and of time division multiplexing of downconverted upper band signals with low band signals to form an aggregate data stream (col. 5 lines 30-50 which discloses real time multiplexing).

Farhan does not explicitly teach of digitally combining each of the plurality of low band signals. However, in the same field of endeavor, Sage teaches of digitally combining a plurality of low band signals (See Fig. 4, 202 and Fig. 5, 302, and 304 which discloses a digital combiner/adder for combining/adding the N filtered digital return signals). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the teachings of Farhan to incorporate digitally combining each of the plurality of low band signals as taught by Sage for the mere benefit of performance enhancements such as power efficiency as well as having smaller hardware components which is also cost effective.

The combination of Farhan and Sage does not explicitly teach of wherein the digitally combined plurality of low band signals forms a combined low band signal and wherein the time division multiplexing consists of the combined low band signal to form an aggregate data stream. However, in the same field of endeavor, Leblanc teaches of combining the plurality of low band signals to form a combined low band signal (See col. 3 lines 7-14 which discloses adding low band data to produce summed low band data).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the teachings of Farhan and Sage to incorporate wherein the plurality of low band signals are combined to form a combined low band signal as taught by Leblanc in order to match the data rates and compatibility of different communication interfaces such as wideband, as to be able to transmit and/or receive the combined low band data to/from data communication interfaces having different spectral masks resulting in efficient bandwidth usage (Leblanc, col. 2 lines 1-50), and wherein the time division multiplexing of Farhan consists of the combined low band signal to form an aggregate data stream as taught by Leblanc for the mere benefit of being able to conveniently transmit the plurality of information streams as desired to the respective destination.

Regarding claim 2, the combination teaches all the claim limitations of the method of claim 1, further the combination teaches of comprising the step of serializing the aggregate data stream(See Farhan, col. 5 lines 35-40 which discloses serializing and framing unit).

Regarding claim 3, the combination teaches all the claim limitations of the method of claim 2, further the combination teaches of comprising the step of transmitting the serialized aggregate data stream to a receiver (See Farhan, col.5 lines 35-40 which discloses transmission over an optical communication channel to the head end).

Regarding claim 4, the combination teaches all the claim limitations of the method of claim 3, further the combination teaches of comprising the step of receiving the low band signals at a digital to analog converter and outputting a single RF return stream low band signal (See Farhan, col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 5, the combination teaches all the claim limitations of the method of claim 3, further the combination teaches of comprising the step of upconverting each of the plurality of upper band signals to the original frequency range of the upper band signals (See Farhan, col. 6, lines 59-67, which discloses that the received signal on each channel is translated to the appropriate center frequency)

Regarding claim 6, the combination teaches all the claim limitations of the method of claim 5, further the combination teaches of comprising the step of receiving each of the plurality upper band signals at a digital to analog converter and outputting an RF return stream signal for each of the plurality of signals (See Farhan, col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 7, the combination teaches all of the claim limitations of the method of claim 6, the combination further teaches of comprising the step of combining the single RF return stream low band signal with each of the plurality of RF return

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stream signals for each of the plurality of upper band signals to form a full return band signal for each of the upper band outputs. (See Calderone, col. 3 lines 1-15 which discloses combining the low band signals and Farhan, Fig.7, components 712 -716 which discloses a low band signal BPF which is then summed up in 716 with a plurality of upper band outputs from the remaining upper band BPF's. Moreover, the outputted stream may represent the full band signal for each of the upper band outputs since each of the high band signals is present in the outputted stream and thus the outputted stream may be construed as a full band signal for each of the high band outputs. Furthermore, summing signals to combine low band and high band signals to produce a full return band signal is notoriously well-known in the art. Therefore it would have been obvious of one of ordinary skill in the art to have modified the teachings of Farhan and Calderone to include the summing of low band with each of the upper band signals to form a full return band signal for each of the upper band outputs for the mere benefit of being able to accommodate various data applications and/or for the expected result of reducing the data rate for a particular application)

Regarding claim 8, the combination teaches all of the claim limitations of the method of claim 1, the combination further teaches of wherein parameters determining the split frequency for the low band and upper band, and an upper bound on the upper band, are programmable (See Farhan, col.4 lines 13-37 which discloses downloading appropriate commands for programming the dsp).

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Regarding claim 9, the combination teaches all of the claim limitations of the method of claim 1, the combination further teaches of wherein a parameter determining sample resolution of said step of downconverting each of the plurality of upper band signals from an original frequency range into a new downconverted frequency range is programmable (See Farhan, col. 4 lines 13-36, which discloses that a programming unit could be coupled to the control input of the node to download appropriate commands for programming the dsp)

Regarding claim 10, see the analysis of claim 1. Furthermore, the combination teaches of a system for transmitting multiple return path signals using lower data rate transmitters, the system comprising: a converter for digitizing each of the multiple return path signals (See Farhan, fig 4., 410 which discloses A/D converters); a processor for processing/band-splitting each of the multiple return path signals into respective low and high bands(See Farhan, Fig 4., 420 which discloses the dsp which is responsible for filtering and channelization functions), and adding the low bands to form an aggregate low band signal (See analysis of claim 1); a multiplexer for time division multiplexing the aggregate low band signal with each high band signal to form a combined data stream(See analysis of claim 1, also see Farhan, Fig 4., 440 which discloses a multiplexer)

Regarding claim 11, the combination teaches all of the claim limitations of a system according to claim 10, the combination further teaches of wherein said



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processor comprises a digital processor (See Farhan. Fig 4., 420, dsp)

Regarding claim 12, the combination teaches all of the claim limitations of a system according to claim 10, the combination further teaches of wherein said processor comprises digital and analog components (See Farhan, Fig. 4, 410, which discloses an A/D converter which would inherently imply digital and analog components).

Regarding claim 13, the combination teaches of a system according to claim 10, the combination further teaches of comprising a digital to analog converter at a receiver end to receive the low band signals and output a single RF return stream low band signal (See Farhan, col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 14, the combination teaches of a system according to claim 10, the combination further teaches of comprising a digital to analog converter at a receiver end to receive each of the plurality upper band signals and output an RF return stream signal for each of the plurality of signals (See Farhan, col.7 lines 1-15 which discloses a D/A converter for conversion back to an analog signal).

Regarding claim 15, the combination teaches of a system according to claim 10, the combination further teaches of wherein said processor may be programmed to

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determine the split frequency for the low band and upper band, and an upper bound on the upper band (See Farhan, col. 4 lines 13-36 which discloses the ability to change the filter algorithm with the use of programming commands).

Regarding claim 16, the combination teaches of a system according to claim 10, the combination further teaches of wherein said processor may be programmed to determine a sample resolution to downconvert each of the plurality of upper band signals from an original frequency range into a downconverted frequency range (See Farhan, col. 4 lines 13-36, which discloses that a programming unit could be coupled to the control input of the node to download appropriate commands for programming the dsp)

### ***Conclusion***

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### **Contact**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky Chin whose telephone number is 571-270-3753. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Koenig can be reached on 571-272-7296. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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